



HML-series

Laser distance measurement by transit time measuring method

<p>General features</p> <ul style="list-style-type: none"> - Non-contact distance measurement - Ranges up to 1000 m (reflectors, glass prism) - High precision, high resolution, high measuring rate - Visible pointer for adjusting - Integrated microcontroller for intelligent and parameterisable measuring data evaluation - Digital and analogue interfaces; 2 switch outputs - Profibus DP interface optional - Internal self-test - Robust design - Easy installation in any mounting position 	<p>Product family</p> <p>The HML series consist of electro-optical range finders that feature compact design and application oriented measuring technology.</p> <p>The range on natural surfaces is 155 m. When using reflectors or glass prism it is possible to enlarge the range up to 1000 m.</p> <p>Furthermore to these sensors the HML 600 belongs. This device is preferentially used for positioning task as e.g. for crane or conveyor controls.</p>																				
<p>Extended features HML series</p> <ul style="list-style-type: none"> - Close-up range blanking for dirt and dust suppression at the face-plate - Internal device temperature to read out via interface - Continuous pilot light for easy adjustment - Extended operating ambient temperature range -10°C up to +55°C - Measuring range up to 600 m onto reflection foil, 1200 m onto triple prism - Configuration software inclusive - CDRH- certification 	<p>Applications HML</p> <table border="0"> <tr> <td style="vertical-align: top;">General</td> <td>Distance measurement with and without reflector</td> </tr> <tr> <td style="vertical-align: top;">Measurement</td> <td>Length, width, height, level and position of objects and environs</td> </tr> <tr> <td style="vertical-align: top;">Steel industry</td> <td>Measurement and positioning of steel, aluminium and other mill products</td> </tr> <tr> <td style="vertical-align: top;">Ports</td> <td>Distance measurement on cranes, trolley and containers; anti-collision</td> </tr> <tr> <td style="vertical-align: top;">Conveying</td> <td>Positioning of conveying vehicles, light barrier; gauge measurement in silo</td> </tr> <tr> <td style="vertical-align: top;">Crane control</td> <td>Positioning of cranes; anti-collision; goods profile measurement</td> </tr> <tr> <td style="vertical-align: top;">Metal industry</td> <td>Dimensions of slabs, automatic saw; diameter of steel- and aluminium coils</td> </tr> <tr> <td style="vertical-align: top;">Paper industry</td> <td>Diameter of paper rolls; level of water and paper; sag; stacking height</td> </tr> <tr> <td style="vertical-align: top;">Food, Chemistry</td> <td>Level measurement on fluid and solid materials</td> </tr> <tr> <td style="vertical-align: top;">Mining</td> <td>Tunnel and cavity measurement</td> </tr> </table>	General	Distance measurement with and without reflector	Measurement	Length, width, height, level and position of objects and environs	Steel industry	Measurement and positioning of steel, aluminium and other mill products	Ports	Distance measurement on cranes, trolley and containers; anti-collision	Conveying	Positioning of conveying vehicles, light barrier; gauge measurement in silo	Crane control	Positioning of cranes; anti-collision; goods profile measurement	Metal industry	Dimensions of slabs, automatic saw; diameter of steel- and aluminium coils	Paper industry	Diameter of paper rolls; level of water and paper; sag; stacking height	Food, Chemistry	Level measurement on fluid and solid materials	Mining	Tunnel and cavity measurement
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Short description HML series

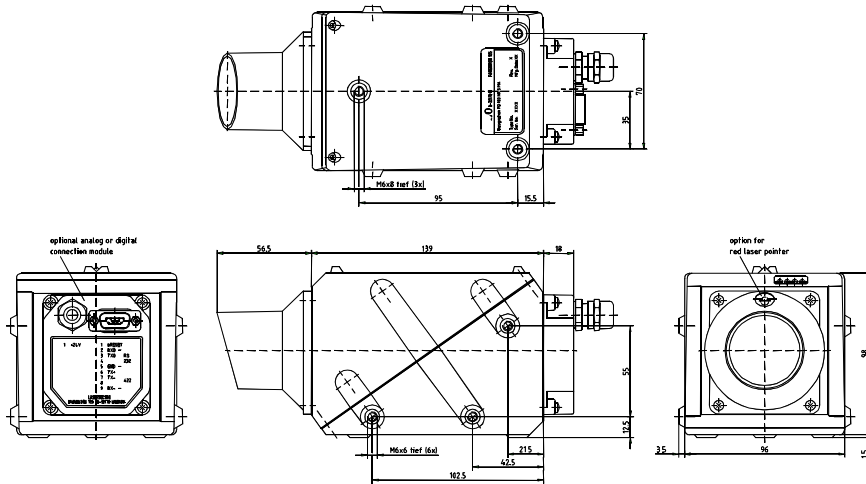
The HML with its unique pulse transit time measuring method can measure distances on reflectors in a working range of more than 1000 m and 155 m on natural surfaces. The sensor emits ultra-short laser pulses from a laser diode. If the light pulse strikes an object, it will be reflected from its surface. The reflected signal is registered by a photo diode in the laser range finder's receiver. The distance between instrument and target is determined by the time that elapses between the laser pulse emission and its reflection being registered in the sensor. The measuring data are serially output via the digital interface (for PC or PLC) and via 4...20 mA interface for the analogue measurement value processing.

The HML is equipped with a microprocessor with which the application 'distance measurement' is evaluated. In doing so high precision can be measured by controllable averaging as well as high-dynamic moves. Fixed distances can be defined as thresholds. Measurements below these thresholds will be displayed and indicated via switch outputs and LEDs. Parameterisation is made by means of a laptop via RS 232 interface. The HML is equipped with RS 232, RS 422 and analogue interface as standard. Optional interface is PROFIBUS DP.

Sales information

HML
The manufacturer reserves the rights to alter specification without prior notice. Data without tolerances are typical values.
State: 30. March 2007

Dimensional drawing HML



Connector pin assignment

Depending on terminal cap
Standard: RS232 / RS422

9-pole D-SUB:

- | | |
|------------|----------------|
| 1. nRESET: | external RESET |
| 2. RXD: | RS 232 |
| 3. TXD: | RS 232 |
| 4. nc: | not used |
| 5. GND: | RS 232 |
| 6. TX+: | RS 422 |
| 7. TX-: | RS 422 |
| 8. RX+: | RS 422 |
| 9. RX-: | RS 422 |

Fixed cable

- | | |
|-----------|----------------------|
| 1. +24 V | External Supply |
| 2. 0 V | Supply ground |
| 3. E1 | Switch point 1 |
| 4. E2 | Switch point 2 |
| 5. VBB | Switch supply E1, E2 |
| 6. AIGND | Ground AI a. E1, E2 |
| 7. AI | Analogue output |
| 8. nRESET | external RESET |

Technical data HML

Model	HML 7.5	HML 10	HML 100	HML 20 HT	HML 600
Interfaces					
RS 232 / RS 422 / 4 – 20 mA, 0,3 %	X	X	X	X	X
Profibus DP	X	X	X	X	X
Switch outputs	E1, E2	E1, E2	E1, E2	E1, E2	E1, E2
Ranges					
white 90 %	0.1...15 m	0.1...20 m	0.5...155 m ¹⁾		
grey 18 %	0.1...7.5 m	0.1...7.5 m	0.5...70 m ¹⁾		
black 6%	0.1...3.7 m	0.1...3.7 m	0.5...40 m ¹⁾		
red-hot surfaces ≈1400°C				0.5...20 m ¹⁾	
Reflection foil		0.5...> 80 m	2...800 m		0.5...600 m ¹⁾
HR plastic reflectors					0.5...800 m ¹⁾
Triple prism					0.5...1200 m ¹⁾
Accuracy*	+/- 1.5 mm	+/- 1.5 mm	+/- 3 mm	+/- 5 mm	+/- 2 mm
Temperature drift*	0.3 mm/K	0.3 mm/K	0.3 mm/K	0.3 mm/K	0.3 mm/K
Measuring frequency	1 KHz	1 KHz	1 KHz	1 KHz	5 KHz
Laser class	1	1	1 ²⁾	1 ²⁾	1 ²⁾
Laser protection class DIN EN 60825-1:2001					
Light spot in 10; 100 m	7 cm; -	7 cm; -	7; 52 cm	7 cm; -	7; 52 cm
Divergence	5 mrad	5 mrad	5 mrad	5 mrad	5 mrad
Output distance	ASCII text or binary code	ASCII text or binary code	ASCII text or binary code	ASCII text or binary code	ASCII text or binary code
Display 4 LEDs	Function indicator	Function indicator	Function indicator	Function indicator	Function indicator
Electrical supply					
Voltage	18...30 VDC	18...30 VDC	18...30 VDC	18...30 VDC	18...30 VDC
Current	0.25 A (24 V)	0.25 A (24 V)	0.25 A (24 V)	0.25 A (24 V)	0.25 A (24 V)
Environmental					
Protection class	IP 65	IP 65	IP 65	IP 65	IP 65
Shock and vibration	IEC 68	IEC 68	IEC 68	IEC 68	IEC 68
Temperature range²⁾					
Operation	-10°C...+50°C ³⁾	-10°C...+50°C ³⁾	-10°C...+55°C	-10°C...+55°C	-10°C...+55°C
Storage	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C	-25°C...+70°C
Weight	1.3 kg	1.3 kg	1.3 kg	1.3 kg	1.3 kg

* Reproducibility for typ. devices under constant environmental conditions (approx. 20°C, 1013 mbar, same target) after at least 30 min. power-on time

¹⁾ When close-up range blanking is activated the minimum distance increases to 2 m

²⁾ When simultaneously using measuring laser and laser pointer (marking laser) the laser class changes to 2!

³⁾ In conjunction with HESMOR adjusting support

Scope of delivery HML /ELD P series Sensor, operating instructions, fastening screws

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